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ABSTRACT

This paper presents an evaluation of both process (program content) and outcome (effects on children) of a day care center and emphasizes the importance of considering process variables in order to understand program results. Subjects for the study were 25 control children who were not attending a preschool program, 25 children who attended the day care center part time, and 25 children who attended the center full time. All of the children were approximately 4 years old at the beginning of the program. The outcome evaluation focused on changes in language development, intelligence test scores, and social maturity over a 6-month period. The process evaluation involved an observational analysis and questionnaire describing teachers' behaviors in five categories: activities, materials, subjects of instruction, teacher-expressive behaviors, and program goals. The results of the outcome evaluation indicated no significant differences between the groups of any of the measures at the end of the 6-month period. The process evaluation indicated little agreement between the teachers regarding important aspects of the program. This evaluation also indicated little correspondence between teachers' ratings of the importance of various aspects of the program and their observed behaviors. The paper suggests that insignificant outcome results are more clearly understood when process variables are considered at the same time. (BD)

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OUTCOME AND PROCESS EVALUATION OF A DAY CARE CENTER*

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ABSTRACT

In recent years there has been great interest in the evaluation of early childhood education programs. The evaluation traditionally has centered on the outcomes of such programs. However, it is important to examine the content of the program through process evaluation as well. The present study conducted both outcome and process evaluation of a day care center. The subjects were 25 control children, 25 children who attended the day care center on a part time basis and 25 children who attended the day care center on a full time basis. The results relating to the outcome evaluation indicate that there were no significant differences between the groups after the experimental groups were exposed to a program for six months. The process evaluation indicated little agreement among teachers regarding important aspects of the program. The results indicate the importance of process evaluation to enable a more complete understanding of outcome evaluation.

OUTCOME AND PROCESS EVALUATION OF A DAY CARE CENTER

During the 1960's there was a dramatic expansion in attempts to intervene in the environment of low socioeconomic children. The basic aim of most intervention programs has been to boost the lagging cognitive growth of the so-called disadvantaged child. The evaluation of such programs has typically employed the classical experimental model and may report findings such as "A group of children who participated in a preschool program gained or did not gain in terms of language ability as compared with a group who did not attend the preschool". A recent article by Ryan and Moffitt (1974) points out that although findings such as this are important, a wider scope for evaluation is needed. Ryan and Moffitt (1974) suggest that it is important to define and analyze the content of a program as well as the outcomes of the program. That is, research must become more process-oriented as opposed to the outcome oritentation that presently exists.

In America there have been numerous intervention attempts under the auspices of Head Start and Title I Kindergartens. In Australia as well, interest and research in early intervention has blossomed (deLacey, et al., 1973, Taylor, et al., 1974). However, in Canada experimental studies on the effects of a child having participated in a day care center program have just recently been conducted by authors such as Wright (Note 3) and Doyle (Note 1). Other researchers (Ryan, Note 2) have investigated

the effects of home intervention programs on the development of young children. The present evaluation provides and opportunity for a detailed investigation regarding the developmental benefits to the children attending a day care center (outcome evaluation) as well as examining the content of the program (process evaluation). It should be noted that the day care center was a demonstration project designed to develop innovative programs in early childhood education.

Outcome evaluation

This section of the evaluation provides an examination of the outcomes of the center and takes account of the effects of the center on the intellectual, linguistic and social development of children. Since the center catered largely to low socioeconomic groups, it was expected that the program would have beneficial developmental effects on children attending the center as compared to a control group who did not attend the center. This analysis provides a valuable indication as to the educational effects of participation in an early childhood education program.

Process evaluation

As stated previously there is a definite need to widen the scope of evaluation of preschool programs. As well as examining the outcomes, the research should also examine the content of preschool programs. One method of doing this is to identify the goals of the program and analyze how these goals are reached. Through this means the teaching process and its

relationship to pupil learning can be examined. The most effective method of accomplishing this task is through direct observation of the classroom situation. Through this method it is possible to distinguish effective teaching methods and teachers from the ineffective. For a detailed discussion of direct observation of teacher behavior the reader is referred to Medley and Mitzel (1963).

Methodology

Subjects

The subjects in the experimental group consisted of 25 children who attended a day care center on a full-time basis and 25 who attended on a part-time basis (mornings only) beginning September 1974. The control group consisted of 25 children who did not attend any early childhood education program. It should be noted that for the post-testing three children in the full-time group were unavailable for testing, bringing the number of the full-time group to 22 children. As well, only 19 children in the control group were given the post-tests as a number of parents would not consent to have their children retested. This was in spite of the fact that $10.00 was offered as an inducement and transportation made available. The part-time, full-time and control groups were matched for age, language ability, IQ, behavioral maturity, and socioeconomic status. Table 1 presents the pre-test data for the three groups. There were no significant differences between the groups on any of the measures.

Insert Table 1 about here

The socioeconomic levels for the three groups are rated on a modified form of the Blishen (1967) scale. There were no significant differences between the groups in level of occupational status as tested by a chi square technique ($\chi^2 12$ df$<$(12.86).

Measurement

Outcome analysis

Before the children entered the program in September 1974, they were administered a series of pre-tests to determine their level of functioning at that time. The control group was also tested. Post-tests were administered to the control, part- and full-time groups during March 1975. The following tests and scales were used as pre- and post-tests to assess the effects of attendance on children.

(i) Language

To assess the language development that occurs, the Assessment of Children's Language Comprehension Test (ACLC) was utilized. This test was developed by Foster, et al. (1973) to measure the growth of language abilities in young children.

(ii) Intelligence

To assess overall intellectual functioning, the Stanford-Binet (SB) was utilized. This intelligence test is particularly useful for young children. The Peabody Picture Vocabulary Test (PPVT) was used as an estimate of verbal intelligence. As the

PPVT requires only a motor response and not a verbal response it is particularly appropriate for use with young children who may not respond verbally to an examiner.

(iii) Social Development

As well as the intellectual and linguistic aspects of development, the evaluation also assessed the effects of day care on the social development of the children. The Behavioral Maturity Scale (BMS), a teacher rating device, (Kim, 1968) was utilized in this aspect of the assessment. Although Kim originally developed the scale for use with second graders it has been adapted for use with preschoolers as well. The scale measures emotional, social and academic maturity. Research with preschoolers has indicated that both the social and emotional maturity factors are clear cut factors. However, academic maturity in preschoolers tends to be made up of two factors, the child's ability to work independently and his enjoyment of books. Overall the Behavioral Maturity Scale provides one of the better estimates of a child's maturity in the three areas.

Process Analysis

To examine the teacher-child interaction and the content of the program the Observational Schedule and Record (OScAR) developed by Medley and Mitzel (1963) was utilized. The OScAR allows for systematic observation of the behavior of teachers in four main categories: activities, instructional materials,

subjects of instruction and teacher-expressive behaviors. The teacher's behavior was observed and recorded on the OScAR by a trained observer. As well as the OScAR a questionnaire was administered to the teachers. The questionnaire is designed to parallel the OScAR and the teachers rate each item on the questionnaire on a 10 point scale in order to indicate the relevance of the particular item to their program. This design allows for correlations to be calculated between the teachers' observed behaviors (from the OScAR) and their program goals as indicated in their responses to the questionnaire.

Results and Discussion

As there are several areas to be discussed the various aspects of the evaluation will be presented under separate subheadings.

Outcome evaluation

i) Linguistic effects:

The effects of the Center on the development of children's language can be determined by examining the post-test scores for the Assessment of Children's Language Comprehension Test. As there were no significant differences among the groups on the pre-test, any gains should be indicated by significant differences between the experimental and control groups on the post-test. Part A of the test measures core vocabulary development. As can be

seen by an examination of Table 1 there are no significant differences among the groups. Apparently attendance at the center has had little effect on the development of vocabulary.

Parts B, C and D of the ACLC measure a child's comprehension of an increasing number of critical elements and the consistency of patterns of words identified in a sequence. An examination of Table 1 indicates that there are no significant differences among the groups. Thus in respect to language development there appears to be little benefit arising from attendance at the day care center.

(ii) Intellectual functioning:

In regard to the effects of attendance at the center on the development of intelligence, the results for both the PPVT and the Stanford Binet indicate that there are no significant differences between groups. There appears to be little to gain in terms of intellectual functioning through attendance.

These results relating to linguistic and intellectual functioning were both surprising and disappointing as it was expected that attendance at the center would have positive effects in these areas. This was especially so as the center was acting as a demonstration project supposedly to develop innovative programs for day care centers. From these results alone it is not possible to specify possible causes that might account for the rather disappointing performance of the experimental groups. These results indicate the necessity of

the process evaluation to suggest reasons why attendance at the center has had little effect on linguistic and intellectual development of the children.

iii) Social effects

The Behavioral Maturity Scale was used to measure the socialization effects of attendance at the center. This scale provides three measures of maturity: academic maturity, social maturity and emotional maturity. Since the teachers must observe and rate children over a period of time in each of the three areas it was not possible to rate the control group on the Behavioral Maturity Scale. As indicated in Table 1, there were no significant differences on the pre-test results between the part- and full-time children. However, as also shown in Table 1 the part-time group scored significantly higher than the full-time group on academic and emotional maturity on the post-test. This may result from the fact that the part-time group has a somewhat higher socioeconomic level. Although there are no significant differences overall, the part-time group does have fewer children from families in the lowest three categories on the socioeconomic scale.

Process analysis

The results presented in this section relate to the activities that occur daily in the day care center. In an effort to examine the activities in the center, the teachers were administered a questionnaire covering the following five

areas: goals of the program, program activities, subject areas, teacher-expressive behavior, and materials used. As well, the teachers were observed by a trained observer who utilized the OScAR to record the teacher behavior. The first aspect of this part of the evaluation was to discover if there was general agreement among teachers regarding the relevance of the five areas covered in the questionnaire. Correlation coefficients were calculated between the seven teachers that responded to the questionnaire. The results for the goals section are presented in Table 2. Through an

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Insert Table 2 about here

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examination of the correlations in Table 2 it is clear that the teachers generally do not agree with the importance of various goals for their programs. Only 11 of the possible 21 correlations are significant in a positive direction. Even the significant correlations are not particularly high. In fact the negative correlations of teacher 2 with the others indicates that she has strong opposing opinions as to the importance of the various program goals. This raises an important question as to the effectiveness of any program in which teachers are not aware of the goals to be obtained. If preschool programs are to be successful the teachers involved in the program should be aware of and in agreement with the goals of the program. In the present case the teachers appear

to have a relatively individualistic interpretation of what constitutes an important goal.

Teachers were also asked to rate the relevance of various child and teacher activities. The correlations are presented in Table 3. All but five of the correlations are

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Insert Table 3 about here

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significant. Teacher 4 accounted for 3 of the 5 non-significant correlations. This indicates that, excluding teacher 4, there is relatively high agreement on the importance of various activities conducted in the center. As indicated in Table 4 there is also agreement among teachers in regard to the various subject areas which are important. Of the 21 possible correlations

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Insert Table 4 about here

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only 5 are not significant. Of the 5 teachers, teacher 5 accounts for 3 of the non-significant correlations. In these two areas, activities and subject matter, there is considerable agreement among the teachers regarding the importance of these areas for the program. However, if the activities and subject matter are not directed toward common goals it is likely that little change can result in children involved in the program.

Table 5 presents the correlations among teachers on the importance of various types of teacher-expressive behavior such as supporting or reproving children. Of the possible 21 correlations only 6 are significant. It can be concluded

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Insert Table 5 about here

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that there is little agreement among teachers regarding important aspects of teacher-expressive behavior. The final area surveyed was the materials teachers used in their daily activities. Table 6 presents the correlations of teachers' ratings relating to the materials utilized to attain program goals. Of the 21 possible

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Insert Table 6 about here

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correlations only 9 are significant. The teachers tend not to agree on the type of materials necessary to achieve the goals of the program. The fact that teachers are not in agreement on teacher-expressive behavior or materials used can probably be related to the fact that there is little agreement among the teachers regarding the goals of the program. If the teachers were in agreement regarding goals then it is more likely that they could agree on how to achieve the goals. These results indicate

that there is a definite need for professional development seminars in which teachers can discuss and become more aware of the goals of the center and how to achieve these goals.

The research also included an observation of each teacher's behavior as they interacted with the children at the center. The observations cover the following areas, corresponding to the questionnaire administered to the teachers, materials, teacher-expressive behavior, subjects and activities. As a result it was possible to correlate the teachers' responses on the questionnaire to their observed behavior in the classroom. These correlations are presented in Table 7.

Insert Table 7 about here

The correlations for materials utilized, with what the teachers report as being relevant to their program goals are, except for two teachers, not significant. This indicates that materials which teachers report as relevant for their program are not the materials they were observed using. This is in spite of the fact that the materials they rate as relevant were available in the center. Similar findings are reported for teacher-expressive behavior and activities. That is to say, behavior that teachers rated as important teacher-expressive behaviors and activities were not in fact the expressive behaviors or activities that were observed in the

classroom except for three teachers. In the subject areas, 4 of 7 teachers were found to have significant correlations between what they reported as relevant to their program and their observed behavior in the center. Overall the non-significant correlations are due to the large discrepancies which exist between the parallel observational and questionnaire data. These findings raise important questions as to why teachers generally do not carry out various behaviors they rate as relevant to the achievement of the program goals. Are the behaviors teachers rate as relevant in fact important to the program? Does the center in some way inhibit teachers and the behavior they see as important? Presumably the center should strive to bring about a greater correspondence between teachers' behavior and activities and goals of the program. In-service workshops are one way to effectively improve the conceptual understanding of goals as well as methods to achieve the goals.

This research clearly indicates the importance of process evaluation. If only the outcome research had been conducted there would be little to account for the disappointing results and little suggestion for change. The descriptive data provided by the process evaluation shows many inconsistencies in goals and teacher behavior. The fact that teachers tended not to agree among themselves on major aspects of the program and did not use the behaviors they rate as important probably accounts for the results of the outcome evaluation.

Thus the process evaluation suggests a number of significant areas in the center's program that may have resulted in the lack of significant differences between the experimental and control groups. Further, it is clear from the process evaluation where changes should be made to make the program of the center more effective. With an integrated approach to the program by teachers it is likely that significant gains could result. Hence, the process evaluation indicates a clear need for teacher education and a thorough examination of teaching behavior. As well, the evaluation suggests specific areas, such as goals of the program, on which discussion can center. It is only through an analysis of the process variables that outcome research becomes truly meaningful. In an effort to learn more about the effect of preschool programs future evaluations should include an examination of the program through analyses of teachers' behavior.

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Table 1

Means for Full-Time, Part-Time and Control Group Children

	Control		Part-time	
	Pre-test	Post-test	Pre-test	Post-test
Age (in months)	45.00	51.00	48.17	54.17
Stanford-Binet IQ	102.31	109.19	99.63	110.68
Peabody Picture Vocabulary Test	94.93	97.50	95.28	100.60
Assessment of Children's Language Comprehension (A)	40.69	44.56	42.73	46.34
(B)	83.75	87.50	87.82	96.08
(C)	73.13	83.75	72.72	91.73
(D)	60.63	76.88	67.27	85.65
Behavior Maturity Scale:				
Academic	Not available for control group		22.68	25.13
Social			18.72	22.56
Emotional			20.86	25.08

* $p \leq 0.05$

** $p \leq 0.01$

on Pre- and Post-measures

Full-time		F	
Pre-test	Post-test	pre-test	P-test
47.14	53.14	0.99	
95.55	108.70	0.67	0.09
88.50	91.09	1.63	1.92
40.42	45.23	0.80	1.04
85.00	94.28	0.31	2.77
65.55	85.23	0.67	1.31
55.29	77.61	1.39	1.17
17.84	21.42	2.28	6.10*
19.15	19.85	3.96	3.96
17.84	18.28	2.96	18.66**

Table 2

Correlations for Teachers' Ratings of Goals

Teacher	1	2	3	4	5	6	7
1	1.00						
2	0.008	1.00					
3	0.43*	0.44*	1.00				
4	0.56*	-0.16	0.48*	1.00			
5	0.33*	-0.44*	0.04	0.10	1.00		
6	0.53*	0.12	0.45*	0.47*	0.35*	1.00	
7	0.26	-0.18	0.43*	0.15	0.57*	0.24	1.00

*$p<0.05$

Table 3

Correlations for Teachers' Ratings of Activities

Teacher	1	2	3	4	5	6	7
1	1.00						
2	0.56*	1.00					
3	0.38*	0.63*	1.00				
4	0.14	0.18	0.08	1.00			
5	0.57*	0.80*	0.51*	0.41*	1.00		
6	0.41*	0.36*	0.20	0.49*	0.41*	1.00	
7	0.11	0.51*	0.34*	0.56*	0.55*	0.53*	1.00

*p<.05

Table 4

Correlations of Teachers' Ratings for Subject Areas

Teacher	1	2	3	4	5	6	7
1	1.00						
2	0.76*	1.00					
3	0.56*	0.75*	1.00				
4	0.74*	0.99*	0.77*	1.00			
5	0.37	0.36	0.63*	0.42	1.00		
6	0.60*	0.47*	0.37	0.50*	0.67*	1.00	
7	0.75*	0.76*	0.49*	0.75*	0.32	0.78*	1.00

*$p < .05$

Table 5

Correlations of Teachers' Ratings for Teacher Expressive Behavior

Teacher	1	2	3	4	5	6	7
1	1.00						
2	0.41	1.00					
3	0.50*	0.93*	1.00				
4	0.27	0.26	0.32	1.00			
5	0.17	0.80*	0.56*	0.14	1.00		
6	0.43	0.41	0.38	-0.15	0.26	1.00	
7	0.69*	0.51*	0.55*	0.22	0.25	0.27	1.00

*p<.05

Table 6

Correlations of Teachers' Ratings for Materials used to Achieve Program Goals

Teacher	1	2	3	4	5	6	7
1	1.00						
2	0.51*	1.00					
3	0.20	0.64*	1.00				
4	0.62*	-0.19	-0.22	1.00			
5	0.60*	0.72*	0.35	0.13	1.00		
6	0.72*	0.42	0.24	0.32	0.27	1.00	
7	0.50*	0.49*	0.64*	0.09	0.11	0.82	1.00

*p<.05

Table 7

Correlations Between What Teachers Report as Relevant for Their Program With What Was Observed Through the Use of the OSCAR

Teacher	Materials	Teacher-Expressive Behavior	Subjects	Activities
1	0.21	0.08	0.54*	0.42*
2	0.19	0.92*	0.64*	0.27
3	0.29	0.62*	0.35	0.21
4	0.00	0.26	0.53*	-0.02
5	0.50*	0.00	0.46	0.24
6	0.54*	0.33	0.76*	0.26
7	0.00	0.35	0.87	-0.06

*p<.05